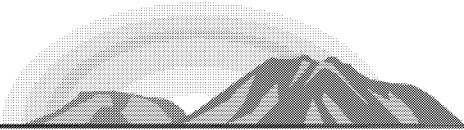


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Appendix B

**OU 7-10 Glovebox Excavator Method Project—
Data Quality Objectives**

Appendix B

OU 7-10 Glovebox Excavator Method Project— Data Quality Objectives

B-1. SCOPE

The scope of these Data Quality Objectives (DQOs) includes:

- General project data objectives, including cost collection, public and worker safety, and design evaluation
- Waste zone material characterization objectives for safe and compliant storage and disposition
- Characterization objectives for certain contaminants in the underburden.

Table 1, Data Objectives for OU 7-10 Glovebox Excavator Method Project, summarizes the minimum data quality objectives and associated characterization approach for the OU 7-10 Glovebox Excavator Method Project. The approach taken to develop Table 1 was to examine the existing data quality objectives for Stage II (see EDF *Operable Unit 7-10 (OU 7-10) Staged Interim Action Project – Stage II, Data Quality Objectives*, EDF-ER-1260) and eliminate characterization requirements tied to DQOs unrelated to safe or compliant storage considerations. DQOs were added to Table 1 for waste acceptance characterization of retrieved waste zone material for disposition at the Advanced Mixed Waste Treatment Facility (AMWTF). DQOs were also added for characterization of certain contaminants in the underburden.

A redlined Stage II DQO Table is included in this Appendix as a supplement to show the changes made to arrive at the present DQOs for the Glovebox Excavator Method. The Glovebox Excavator Method Project DQOs presented in Table 1 have been renumbered for ease of reference for this project.

B-2. ASSUMPTIONS

A number of assumptions are associated with the characterization approach developed in this EDF. The assumptions bound the evaluation performed. In the event that project scope/requirements invalidate the assumptions reevaluation of the characterization approach is required. The current project approach assumes that:

- The inventory of waste and chemicals to be excavated is accurately represented by those evaluated in the previous 90% Remedial Design/Remedial Action Work Plan.
- Polychlorinated biphenyls are present in the waste zone material.
- The ARARs applicable to Stage II are limited to those ARARs identified in the OU 7-10 ROD.
- Visual examination and inventory basis documentation is adequate to characterize waste for items prohibited in DOE M 435.1-1.

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- AMWTF waste acceptance criteria Exhibit I (summary of AMWTF Waste Acceptance criteria for INEL Wastes) applies to the retrieved waste zone material.

B-3. REQUIREMENTS

The primary driving requirements relative to storage of wastes during Stage II are from RCRA and TSCA ARARs and the requirements of Department of Energy Order 435.1 titled *Radioactive Waste Management*. Internal management control procedures and DOE requirements require a determination of fissile material mass to support safe storage in Stage II. The principle fissile isotopes are ^{233}U , ^{235}U , ^{239}Pu , and ^{241}Pu . The AMWTF waste acceptance criteria (WAC) drives the characterization of waste zone material for disposition. The AMWTF WAC is currently being renegotiated and requirements may change.

B-4. COMPARISON WITH EXISTING DQOS

The Stage II DQO EDF -ER-1260 presented the DQOs in terms of soil and waste characterization objectives. The DQOs addressed a number of different characterization objectives, including digface characterization for estimating contaminant migration, characterization for safe storage, and characterization for trade studies. As stated previously, the purpose of this EDF is to identify the characterization requirements for safe and compliant storage and the associated characterization approach for the wastes and soils in Stage II. Table 1 (appended) identifies the DQOs and associated characterization requirements that satisfy this objective.

The approach taken to define the minimum characterization requirements involved two primary steps. First, the existing Stage II DQOs and associated characterization requirements were examined and those that were unrelated to safe or compliant storage considerations were eliminated. Second, the remaining DQOs were revised where appropriate to ensure consistency with current Stage II objectives/requirements. The rationale for the revisions is included in an additional column added to the DQO table adapted from EDF-ER-1260. A redline/strikeout version of Table 1 is presented in the Appendix to show the previous DQOs that were eliminated and to highlight changes made to reflect new DQOs included to reflect Stage II modified scope (e.g., QS12 for underburden characterization).

B-4.1 Summary of the Data Quality Objectives and Characterization Approach

The approach presented on Table 1 relies upon physical sampling, visual evaluation, non-destructive examination (NDE), and process knowledge (i.e., inventory basis) to satisfy the characterization requirements of the ARARs (including chemical compatibility considerations), DOE Order 435.1, fissile material requirements, and the AMWTF Waste Acceptance Criteria. Other measurement approaches could be implemented and may be considered as the Stage II design and operational process progresses. The approach documented in Table 1 is based as closely as possible on the DQO baseline previously prepared for Stage II because this approach was developed through agency interaction, review, and consensus.

A major premise supporting the approach is that the existing inventory basis for Pit 9, Waste Area Group 7, and the INEEL stored waste provides significant process knowledge regarding the characteristics of the various wastes located in Pit 9 supporting an appropriate waste management basis.

Thus, in instances where a waste form/container is generally intact, it is reasonable to assume that visual examination of the waste, augmented where necessary by NDE, will be sufficient to associate the drum with its process knowledge basis.

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Table B-1. Data Objectives for OU 7-10 Glovebox Excavator Method Project (Draft Rev. E).

DQO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS1	NA	Provide characterization data of certain contaminants of concern in the underburden to support subsurface migration evaluations	3.1.2.3-6 3.1.2.1-5 3.1.2.1-6	Characterize underburden soil COCs to support subsurface migration evaluations and/or the OU 7-13/14 RI/FS	1. Am-241 2. Np-237 3. Pu Isotopes 4. U Isotopes 5. Gamma emitting isotopes 6. Volatile Organic Compounds (VOCs) 7. Semi-Volatile Organic Compounds (SVOCs) - presumed absent based on process knowledge for this area of Pit 9. 8. CLP Metals 9. Polychlorinated Biphenyls	The revised Stage II FSP will define sampling details. Conceptual approach involves collection of core samples through the use of the remotely operated excavator. Details depend upon Stage II modification option and design.	1. Alpha spec. or Non-Destructive Assay (NDA) 2. Alpha spec. or NDA 3. Alpha spec. or NDA 4. Alpha spec. or NDA 5. Gamma spec. or NDA 6. SW-846 – 8260B 7. SW-846 – 8270C 8. SW-846-6010B/7000A 9. SW-846-8082	Definitive	1. TBD 2. TBD 3. TBD 4. TBD 5. TBD 6. CLP 7. NA 8. CLP 9. 1 ppm	New objective due to modified Stage II scope. Based on modified Stage II objectives, underburden is not excavated but is exposed to allow sampling for Pu, U, and organic sludge. Additional analyses recommended to address risk evaluations.	New objective due to modified Stage II scope. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 2.1 Recommended Approach, 3.3 Stage 2 Objectives and Requirements, 4.1.4 Risk Analysis, and 4.3.1 Process Description. Samples will be taken of the underburden.
QW1		Assure safe storage of waste zone material (which includes sludges and interstitial soil).	3.1.2.1-3 3.2.3-1 3.1.2.3-1 3.2.3-2 3.2.3-3 3.1.1.3-2 3.1.1.3-1	Collect sufficient information to support safe, compliant storage and segregation of incompatible wastes.	1. Visual Description. -Color -Consistency -Orig. Packaging Description 2. Weight in new Pkg. 3. Fissile equivalent 4. Volume in new Pkg. 5. Reactive cyanide	1. 100% visual inspection. 2. Approx. density obtained from weight and volume as repackaged. 3. 100% drum assay will provide radiological characterization. 4. Visual at closure of container 5. 100% visual inspection, collect and analyze biased samples where concentrated cyanides are suspected.	1. Visual 2. N/A 3. NDA 4. N/A 5. SW-846 Ch. 7, Sect. 7.7.3; 9014	Definitive	1. N/A 2. 10 lb 3. TBD 4. nearest 1/8 drum 5. 1 mg/kg	Visual indication of possible pyrophoric metals (e.g., U fines or chips) to result in segregation and/or other actions per QW2. Assay indications of the possibility of pyrophoric metals (e.g., U fines or chips) in debris drums to result in other actions per QW2. 2.4. Density estimate to be calculated from noted weight and volume measurements. 6. Suspicious objects (e.g., pellet concentrations) are found in waste batches, additional measurements will be required as shown.	
QW2		Assure safe storage of unique items encountered in RFP wastes (i.e., unknowns such as lab packs, powdered metals, gas cylinders, munitions, etc.).	3.1.2.1-3 3.2.3-1 3.2.3-2 3.1.1.3-1 3.1.1.3-2	Collect sufficient information to support safe management and segregation of incompatible wastes.	1. Conduct visual examination 2. Conduct screening if possible (TBD based on item found) 3. Collect sample and analyze for unknowns based on what is determined from #1 and #2 above	If necessary, sample will be collected. Sampling methodology is based on what is found. Special case waste procedures may be implemented here.	TBD based on item found	Definitive and/or screening	TBD may include any/all of screening measurements noted in other Stage II DQOs as well as other measurements not specified herein.		

Table B-1. (continued). (Draft Rev. E)

DQO Ref. #	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW3	N/A	Characterize waste zone material for acceptance at Advanced Mixed Waste Treatment Facility	3.1.2.4-3 3.1.2.3-3 3.1.2.3-5	Provide data on excavated waste zone material for disposition to AMWTF	1. Weight of container 2. CLP Metals 3. Nitrates 4. pH 5. VOCs 6. SVOCs 7. a. PCBs in liquid b. PCBs in waste zone material 8.a TRU activ. 8.b Pu equivalent, Ci. 8.c Fissile equivalent 8.d U isotopic masses 8.e Pu isotopic masses 8.f Am 241 mass 8.g Total fissile mass (U-233, U-235, Pu-239). 8.h Non-fissile beta-gamma emitting radionuclides 9. Beta/gamma/neutron contact dose rate on container surface 10. Gamma /neutron dose rate at one meter. 11. Neutron contribution (at contact) 12. Container surface smearable alpha/beta contamination 13. Thermal power	1. TBD 2 – 6 and 13. Statistical number of grab samples will be collected and composited from the transfer cartloads, for 80% confidence. 7a. 100% visual inspection in glovebox, collect and analyze biased samples of free liquids when found. 7b. Grab samples will be collected and composited from a statistically determined number of containers. Statistically-based laboratory confirmation will be performed on the population screened as < 50 ppm PCBs. Designation of samples to receive PCB confirmatory analysis may occur up to three months after collection 8. 100% container assay. 9-12. 100% container survey.	1. Gamma spec. or NDA 2. SW-846 – 6010B/7000A 3. SW-846 –9056 4. SW-846-9045C 5. SW-846-8260B 6. SW-846-8270C 7. 7.a Visual. SW-846-8082 for liquids 8. 7b. SW-846-4020 9. Confirmatory Analysis 10. By SW 846-8082 8. As achievable with current state of art 11. 9-12 .Health 12. Physics survey 13. ASTM D240	Definitive, Health Physics Screening	1. TBD 2. CLP 3. 1 ppm 4. ± 0.1 5. CLP 6. CLP 7. 7a. 1 ppm 7b. 20 ppm Confirmatory Analysis 1 ppm 8. TBD 9. 1 mRem/hr 10. 1 mRem/hr 11. 1 mRem/hr 12. 10 dpm/100cm ³ beta-gamma, or dpm/100 cm ³ alpha 13. TBD	Assume the project will certify waste to the INEEL portion of the AMWTF. Specific criteria for the project are subject to change pending negotiation with BNFL. 7. Free liquids will be stabilized with absorbent after sampling.	New objective due to modified Stage II scope. Based on modified Stage II objectives, waste zone material is characterized for disposition to AMWTF.
QP1	N/A	Monitor and record facility emissions and worker exposure.	3.3.5-1 3.2.4-1 3.2.7-1 3.3.1-1 3.2.2-1 3.2.7-2 3.2.2-2 3.3.5.2 3.2.2-3 3.2.7-3	Start-up/operation authorization and assessing short term risk information.	1. Facility air emissions per Stage II Environmental Monitoring Plan, NESHAPS Air Emissions Plan. 2. Air-monitoring measurements per Stage II Health And Safety Plan (HASP). 3. Worker radiological monitoring records per Stage II HASP.				1-3. In accordance with referenced plans.	1-3. Does not impose or imply additional measurement requirements beyond what is required by safety and environmental regulations.	
QP2	All	Document any problems encountered relative to safety-significant structures, systems, and components.	3.5.5-2	Support Stage II Remedial Action (RA) report.	Unreviewed Safety Question (USQ) or stop work records and resolution documentation.						

Table B-2. Changes tracked from OU 7-10 SIAP Stage II to the Data Objectives for OU 7-10 Glovebox Excavation Method Project (Draft Rev. E)

DQO Ref. #	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS1	D1, D2, D3	Identify soil versus waste at digface and determine when overburden has been removed.	3.7.3.1.1 3.7.1.1.1 3.7.1.2	Support operations through the mapping of the entire area. Cross-correlation of soil drum characterization against overburden/ non-overburden classification.	1. Depth of first visible waste. 1.a Distinguish between waste-object categories. 2. Moisture-visual examination will identify oily, cement-like or otherwise unvacuumable.	1. Visual, throughout Stage II excavation area. 1a. Visually classify wastes and soils based upon the established visual screening categories. 2. Visual observation.	1. Visual observation 2. Visual observation See Note 1s, below.	Screening	1. Qualitative— ²³⁵ U not soil ²³ 1.a Qualitative, as possible visually. 2. N/A	<u>DELETE – The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 2.1 Recommended Approach, 4.1.5 Risk Analysis, 4.2.1-Recommended Approach, 4.3.1 Process description. The overburden will be removed to a specific depth and interstitial soil and waste will be removed together as waste zone material..</u>	
QS2	D1, D2, D3	Support safe retrieval.	3.2.4.4 3.2.9.1 3.3.1.1.10 3.3.1.2.1.2	Support operations through the mapping of the entire area. Data will be for short-term operations usage and is not archived at this process step (see QS4 for archival of pertinent safety decision data).	1. Pu concentration of concern 2. Gamma radiation See Note 1s, below.	1. Monitor at digface. 2. Monitor at digface.	1. Digface fissile monitor 2. Digface gamma radiation detector monitor See Note 1s, below.	Screening	1. TBD g. Pu 2. TBD mR/hr 1. Detailed DFM design is required to determine required detection limit—only action levels are currently available (380 g. Pu). 2. Detailed DFM design is required to determine required detection limit—only action levels are currently available (200 mR/hr).	<u>DELETE – The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001. This is no longer required based on criticality control evaluation.</u>	

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS3	S1, S1a	Determine contaminant migration in soils.	3.7.3.1.1 3.7.3.1.6 3.7.3.1.8 3.7.3.1.9 3.7.8.1.3 3.7.8.14 3.7.8.15	Provide data on hazardous and radionuclide contaminant migration into Stage II pit soils, primarily the underburden soils.	1. Am-241 2. Np-237 3. Pu Isotopes 4. U Isotopes 5. Gamma-emitting isotopes 6. Volatile Organic Compounds (VOCs) 7. Visible contamination 8. Prior waste observed as per QSI? (y/n = overburden/not overburden) 9. QS4, 5, 6, 7 & 8 measurements may also contribute to fulfillment of this objective. See Note 1s, below:	Vertical profile sampling of underburden soils using a remotely-operated grab-profile sampling device. Vertical profile sampling is defined by a XY grid; grab samples are collected randomly from within selected grid locations; like sampling occurs at each underlying layer of the previously selected grid locations; and areas of known soil disturbance are avoided (e.g., around probeholes and coreholes). The Stage II FSP establishes sampling details. These details include selection of grid locations to be sampled (i.e., random if < 100% of total grid locations), sample volume, and the number and location of grab samples collected from within each selected grid location. Stage II Operations Procedures establish the size of the XY grid and the thickness of vertical layers (Z). Biased grab samples may also be collected from around individual drums or groups of drums in the digface using a remotely-operated grab-sampling device.	1. Alpha spec. or Non-Destructive Assay (NDA) 2. Alpha spec. or NDA 3. Alpha spec. or NDA 4. Alpha spec. or NDA 5. Gamma spec. or NDA 6. SW-846—8260B 7. Visual observation 8. Visual observation 9. See analytical methods for QS4, 5, 6, 7 & 8 measurements	Definitive	Step 1. Gross alpha/beta: 10 pCi/g. Step 2. Take sample measurements 1-5 if Step 1 detected >10 pCi/g: 1-4. 10 pCi/g (Alpha spec. only) 5. 1 pCi/g (Alpha spec.-only) 6. Contracted Laboratory Program (CLP)	In-Step I the gross alpha/beta will quickly show if there is anything worth measuring in Step 2. Sample surpluses (unadulterated) will be archived for possible future analysis (should additional constituents of concern be identified).	DELETE – The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 2.1 Recommended Approach. 3.3 Stage 2 Objectives and Requirements. 4.1.4 Risk Analysis, and 4.3.1 Process Description. Samples will be taken of the underburden to determine contaminants in the underburden as described in QS12.
QS4	D1, D3, S2	Record pertinent safety decision data as related to each soil batch retrieved.	3.2.4.4 3.2.9.1 3.3.1.2.1.2 3.5.3.4 3.7.1.13 3.7.3.1.5 3.7.8.52	Link soil batches to pit origins and summary-level digface monitoring data in support of all other data objectives.	1. Maximum expected Pu content (g); log for all batches retrieved. 2. Max expected gamma; log for all batches retrieved. See Notes 1s & 2s, below:	1. Monitor at digface 2. Monitor at digface.	1. Digface fissile (Pu only) monitor screening 2. Digface gamma radiation monitor	Screening	1. TBD g- Pu 2. TBD mR/hr	1. Detailed DFM design is required to determine required detection limit only action levels are currently available (380 g- Pu). 2. Detailed DFM design is required to determine required detection limit only action levels are currently available (200 mR/hr).	DELETE - XYZ traceability is not included in the scope of activities for Stage II. WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001.

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS5	S4, S5, S6, S7, S11	Determine waste constituents related to safe storage of all soils.	3.2.1.2 3.2.1.3 3.2.1.5 3.2.2.1 3.2.9.1 3.7.3.1.3 3.5.3.4 3.7.4.1.7 3.7.4.3.2 3.7.11.5	Characterize soils excavated and retrieved from Pit 9 to determine compatibility for safe storage.	1. Fissile mass (U-233, U-235, and Pu-239) 2. Gamma radiation 3-7 for stained soils only 3. Reactive cyanide 4. VOCs 5. CLP Metals 6. Nitrates 7. Visual Observation	1-2. 100% drum assay for fissile and gamma. 3-7. In-process composite or continuous samples from each saturated and/or stained soil drum or a core sample will be collected immediately after packaging from soil vacuum system, prior to closing the drum lid.	1. NDA 2. SHC hand-held gross gamma 3. SW-846 Ch. 7, Sect. 7.7.3; 9014 4. SW-846-8260B 5. SW-846-6010B/7000A 6. SW-846-9056 7. Visual Observation	Definitive and/or screening	1. 50 g; 2. 10 mR/hr 3. 1 mg/kg 4. CLP 5. CLP 6. 1 mg/kg 7. N/A	NOTE: Title 1 design does not presume intentional vacuum retrieval of significantly stained or saturated soils. Stained soil batches will typically be processed through the MHC, under QW4 and other waste DQOs. Safe storage compatibility will be assumed for vacuumed soils normal in appearance, making measurements 3 through 7 likely unnecessary. This DQO will thus typically reduce to measurements 1 and 2.	DELETE – For the Glovebox Excavation Method, interstitial soil is included with the waste zone material. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.4, Risk Estimate.
QS6	S4, S9, S7, S11	Determine waste content of ≤10 nCi/g (TRU) soils.	3.2.1.2 3.2.1.3 3.2.1.5 3.2.2.1 3.7.3.1.3 3.7.3.1.8 3.7.3.1.9 3.7.4.3.2 3.7.8.13 3.7.8.14 3.7.8.15	Characterize soils excavated and retrieved from Pit 9 against threshold-screen levels and Hazardous Waste/Toxic Substances Control Act determination levels.	1. VOCs 2. Semi-Volatile Organic Compounds (SVOCs) – presumed absent based on process knowledge for this area of Pit 9. 3. CLP Metals 4. Polychlorinated Biphenyls (PCBs)	1 and 4. In-process composite or continuous samples will be collected for VOC and PCB screening from each soil drum OR a core sample will be collected immediately after packaging from the soil vacuum system, prior to closing the drum lid. Samples will be maintained in temporary cold storage (e.g., blue-ice/portable coolers) while awaiting VOC and SVOC (see #2, below) analyses. Samples to be sized to produce surplus material in support of confirmatory analyses below and QS11. 2. A statistically-based number of samples will be analyzed to validate process knowledge assumption as to lack of SVOCs at levels of concern. Designation of samples to receive SVOC analysis will occur at collection, to allow proper climate control (e.g., blue-ice/portable coolers) enroute to analysis. 3. A statistically-based number of samples will be analyzed to produce population estimate as to metals content. Designation of samples to receive metals analysis may occur up to six months after collection. 4. Statistically-based lab confirmation will be performed on the soil population screened as <50 ppm PCB. Designation of samples to receive confirmatory PCB analysis may occur up to three months after collection.	Screening 1. 100 µg/kg 2. N/A 3. N/A 4. 20 ppm Definitive Analyses 1. N/A 2. CLP 3. CLP 4. N/A Confirmatory Analysis 4. 1 ppm	Definitive and/or screening	The proximity of average concentrations of screening data to regulatory thresholds, the variability in the screening data, and an 80% confidence level will be used to determine the number of samples necessary to compare soils excavated to applicable thresholds.	DELETE – For the Glovebox Excavation Method, interstitial soil is included with the waste zone material. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.4, Risk Estimate. Overburden soil fulfills the objective of "clean soil." Interstitial soil is handled as part of "waste zone material". This approach is described in the process description of Section 4.3.1 and in Figure 4.3-2	

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #	Related Process Blocks	Objective	TPR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS7	S4, S7, S11	Determine waste content of >10 nCi/g soils.	3.2.1.2 3.2.1.3 3.2.1.5 3.2.2.1 3.7.3.1.3 3.7.3.1.8 3.7.3.1.9 3.7.4.3.2 3.7.8.13 3.7.8.14 3.7.8.15	Characterize soils excavated and retrieved from Pat 9 to support Toxic Substances Control Act determinations.	PCBs	In-process composite or continuous samples will be collected for PCB screening from each soil drum OR a core sample will be collected immediately after packaging from the cyclone separator, prior to closing the drum lid. Samples to be sized to produce surplus material in support of confirmatory and QSH analyses. Statistically-based confirmation will be performed on the soil population screened as <50 ppm PCB. Designation of samples to receive confirmatory PCB analysis may occur up to three months after collection.	Screening SW-846—4020 Confirmatory Analysis SW-846—8082	Screening	Screening 20 ppm Confirmatory Analysis 1 ppm	Soils >10 nCi/g will be managed as though they contain (RCRA) listed wastes. NOTE: Full hazardous waste determination (i.e., assignment of characteristic codes) will not be performed to support Stage II storage. A VOC screen and/or SVOC analysis may be performed on all soil batches in support of QS6; due to holding times and climate control restrictions, those analyses may be initiated in advance of TRU assay knowledge (depending on turnaround of drum assay data)—such data, if obtained, would prove unnecessary for soils drums assaying >10 nCi/g.	DELETE – For the Glovebox Excavation Method, interstitial soil is included with the waste zone material. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.4, Risk Estimate, Interstitial soil is handled as part of "waste zone material". This approach is described in the process description of Section 4.3.1 and in Figure 4.3-2
QS8	S5, S8	Determine TRU activity of soils.	3.7.3.1.5 3.7.3.1.6 3.7.4.1.2 3.7.4.1.3 3.7.4.3.2 3.7.8.7 3.7.8.13 3.7.8.14 3.7.8.15 3.7.8.16 3.7.8.17 3.7.8.18 3.7.11.6	Segregate soil drums by TRU concentration: i.e., ≤ 10, >10 but < 100 (orphan), ≥100 nCi/g.	TRU activity	100% assay at drum level.	NDA	Definitive and/or screening	As achievable with current state of art.	Stage II to investigate and report on confidence achieved in TRU assay in 10 nCi/g range (see QS9 for information on this DQO).	DELETE – For the Glovebox Excavation Method, interstitial soil is included with the waste zone material. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.4, Risk Estimate, Overburden soil fulfills the objective of "clean soil." Interstitial soil is handled as part of "waste zone material". This approach is described in the process description of Section 4.3.1 and in Figure 4.3-2

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS9	S4, S5, S8, S11	Determine TRU measurement confidence.	3.7.3.1.7 3.7.8.1 3.7.8.19 3.7.8.27 3.7.8.28 3.7.8.29 3.7.8.30 3.7.8.31 3.7.8.50	Provide data to establish the effectiveness and confidence of detecting TRU constituents greater than 10 nCi/g in Pit 9 materials.	1. TRU activity 2. Am-241 3. Np-237 4. Pu Isotopes 5. U Isotopes 6. Gamma isotopes	1. 100% assay at drum level. 2 thru 6. Biased grab sample at drum level to validate TRU content via assay for soils not well represented by established standards.	1. NDA 2. Alpha spec. 3. Alpha spec. 4. Alpha spec. 5. Alpha spec. 6. Gamma spec.	Definitive and/or screening	1. As achievable with current state-of-art. 2. 10 pCi/g 3. 10 pCi/g 4. 10 pCi/g 5. 10 pCi/g 6. 1 pCi/g	The primary means of confirming the confidence with which the assay system can detect TRU constituents greater than 10 nCi/g will be based upon the analysis of prepared standard drum samples. It is considered unlikely that vacuumed soils will deviate so significantly from prepared (calibration) standards that biased confirmatory analyses are warranted. NOTE: The proximity of average concentrations of assay/screening data to the Stage II TRU segregation level and the variability in the assay/screening data will be used to determine the number of samples necessary for any laboratory analyses.	DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.
QS10	S16, S12, S15, S17, S18	Characterize any ≥100 nCi/g (TRU) soils to support possible consideration for WIPP disposal.	3.7.3.1.8 3.7.3.1.9	Provide data to establish whether packaged soils are candidates to be shipped to WIPP for disposal.	1. PCBs 2. Reactivity	1. Sample at the drum level. Designation of samples to receive confirmatory PCB analysis may occur up to three months after collection. 2. Biased sample at drum level where vacuumed soils are noted as distinctly stained or otherwise saturated with apparent contaminant(s).	Screening 1. SW-846-4020 2. SW-846-Ch-7, Sect. 7.7.3; 9014 Confirmatory Analysis 1. SW-846-8082	Screening and/or definitive.	1. 20 ppm/1 ppm 2. 10 mg/kg	Analyses would determine whether soils contain any WIPP “prohibitors.” Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.	DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.
QS11	S18	Support trade studies to assess the treatment/disposal options for contaminated soils and identify the best option for each treatment group.	3.7.3.1.8 3.7.3.1.9 3.7.3.1.10 3.7.4.1.3	Characterize material excavated and retrieved from Pit 9 to support trade studies.	1. QS1-QS10 2. TBD*	1. See QS1-QS10 2. TBD*	1. See QS1-QS10 2. TBD* Confirmatory Analysis 1. SW-846-8082	3. See QS1-QS10 4. TBD*	5. See QS1-QS10 6. TBD*	*NOTE: Additional analyses may be directed after initial retrieval operations in support of disposition trade studies; QS6 and QS7 will collect surplus samples in support of this possibility.	DELETE – Treatability studies are not included in the Stage II scope. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements, does not include treatability studies. Materials present in storage would potentially be available for other uses post- Stage II.

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QS12	NA	Provide characterization data of certain contaminants of concern in the underburden to support return-to-pit and subsurface migration evaluations	3.1.2.3-6 3.1.2.1-5 3.1.2.1-6	Characterize underburden soil COCs to support return-to-pit, subsurface migration evaluations and/or the OU 7-13/14 RI/FS	1. Am-241 2. Np-237 3. Pu Isotopes 4. U Isotopes 5. Gamma emitting isotopes 6. Volatile Organic Compounds (VOCs) 7. Semi-Volatile Organic Compounds (SVOCs) - presumed absent based on process knowledge for this area of Pit 9. 8. CLP Metals 9. Polychlorinated Biphenyls	The revised Stage II FSP will define sampling details. Conceptual approach involves collection of core samples through the use of the remotely operated excavator. Details depend upon Stage II modification option and design.	1. Alpha spec. or Non-Destructive Assay (NDA) 2. Alpha spec. or NDA 3. Alpha spec. or NDA 4. Alpha spec. or NDA 5. Gamma spec. or NDA 6. SW-846 – 8260B 7. SW-846 – 8270C 8. SW-846-6010B/7000A 9. SW-846-8082	Definitive	1. TBD 2. TBD 3. TBD 4. TBD 5. TBD 6. CLP 7. NA 8. CLP 9. 1 ppm	New objective due to modified Stage II scope. Based on modified Stage II objectives, underburden is not excavated but is exposed to allow sampling for Pu, U, and organic sludge. Additional analyses recommended to address risk and return-to-pit evaluations.	New objective due to modified Stage II scope. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 2.1 Recommended Approach, 3.3 Stage 2 Objectives and Requirements, 4.1.4 Risk Analysis, and 4.3.1 Process Description. Samples will be taken of the underburden.
QW1	D1, D3, W1	Record pertinent safety decision data as related to each waste batch retrieved.	3.2.4.4 3.2.9.1 3.3.1.2.1-2 3.5.3.4 3.7.1.1-3 3.7.3.1-5 3.7.8.52	Link waste batches (and final containers) to pit origins and summary-level digface monitoring data in support of all other data objectives.	3. Max expected Pu content (g); log for all batches retrieved. 4. Max expected gamma; log for all batches retrieved. See Notes 1w & 2w, below.	1. Monitor at digface. 2. Monitor at digface.	1. Digface fissile (Pu only) monitor. 2. Digface gamma radiation monitor.	Screening	1. TBD g-Pu 2. TBD mR/hr	3. Detailed DFM design is required to determine required detection limit—only action levels are currently available (380 g-Pu); 4. Detailed DFM design is required to determine required detection limit—only action levels are currently available (200 mR/hr);.	DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001. Modifications, October 1, 2001. Section 4.3.1. Modification Description. Operations will take place under confinement and XYZ traceability is not included in the scope of activities for Stage II.
QW2	W4, W6, W8, W10, W11, W13, W16	Differentiate between Stage II retrieved sludges (i.e. “fingerprint” distinct sludge batches);	3.2.1.4 3.7.3.1-3 3.7.8.13 3.7.8.14 3.7.8.15	Characterize waste excavated and retrieved from Pit 9 sufficiently to discriminate RFP sludge series, enabling a tie to existing process knowledge from RFP.	1. Visual Description: -Color -Consistency -Orig.-Packaging Description 2. VOCs 3. Weight in new Pkg. 4.a TRU activ., nCi/g 4.b Pu equivalent, Ci. 4.c Fissile equivalent 4.d U isotopic masses 4.e Pu isotopic masses 4.f Am 241 mass 5. Moisture 6. Volume in new Pkg.	1. 100% MHC visual inspection. Grab samples will be collected and composited for VOC screening from each waste batch. Samples will be maintained in temporary cold storage (e.g., blue-ice/portable coolers) while awaiting VOC analysis. Samples to be sized to produce surplus material in support of other analysis objectives. 3. MHC scale/load cell. 4. 100% drum assay will provide radiological characterization. A statistically based number of confirmatory samples will be collected and analyzed to validate assay data for waste matrices not well represented by calibration standards. 5. Moisture levels to be obtained from VOC analysis sample (2, above). 6. Visual at closure of new drum at MHC.	Screening 5. Visual 6. GCMS; SW-846-8260B 7. N/A 8. NDA 9. ASTM E829 10. N/A Confirmatory Analysis 10. N/A 11. N/A 12. N/A 13. Alpha spec.	Definitive And/or screening	Screening N/A 100 µg/kg 4 lb. As achievable w/ current state of art. 5 wt % 1/8 drum Confirmatory Analysis 1. N/A 2. CLP 3. N/A 4. 10 pCi/g	NOTE: Process knowledge will support Hazardous Waste determination and safe storage objectives. Indeterminate cases will be coded conservatively consistent with all sludge series not eliminated. Density estimate to be calculated from noted weight and volume measurements. These measurements may also support contaminant migration studies of soils surrounding the sludge drums.	This objective is not required to satisfy of OU 7-10 Stage II objectives.

Table B-2. (continued). (Draft Rev. E)

DQO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW3	W4, W6, W8, W10, W11, W12, W13, W16	Assure safe storage of sludges.	3.2.1.4 3.2.9.1 3.5.3.4 3.7.3.1.3 3.7.3.1.8 3.7.3.1.9 3.7.4.1.7 3.7.11.5	Collect sufficient information to support safe management and segregation of incompatible wastes.	NOTE: Measurements 2-3 apply only if QW2 fingerprinting is not successful in identifying significant quantities of nitrates and/or organics. 8. QW2 field screening measurements 9. Nitrates 10. CLP Metals 11. Reactive cyanide 12. Corrosivity (for liquids only) 13. Ignitability (for liquids only) 14. Total fissile mass (U-233, U-235, Pu-239). 15. Moisture	1. See sampling methods for QW2 field screening measurements. 2-3. Analyze samples* from each sludge batch for lab characterization of incompatibles. 4. 100% MHC visual inspection, collect and analyze biased samples where concentrated cyanides are suspected. 5. 100% MHC visual inspection, collect and analyze biased samples where free liquids are found with sludges. 6. 100% MHC visual inspection, collect and analyze biased samples where free liquids are found with sludges. 7. 100% drum assay. 8. Moisture levels to be obtained from VOC analysis sample (QW2 No. 2, above). *Batch composite samples will be collected in support of QW2, treatability study and other data objectives.	Screening 1. See analytical methods for QW2 field screening measurements. 7. 50 g 8. 5 wt % Definitive Analysis 1. N/A 2. 1 mg/kg 3. CLP 4. 1 mg/kg 5. ±0.1 pH units 6. ±1 °C 7. N/A	Screening 1. See detection limits for QW2 field screening measurements. 7. 50 g 8. 5 wt % Definitive Analysis 1. N/A 2. 1 mg/kg 3. CLP 4. 1 mg/kg 5. ±0.1 pH units 6. ±1 °C 7. N/A	NOTE: This objective may be partially or fully met by QW2. If screening methods identify sludge series sufficiently, collection of sludge batch samples will support only subsequent DQOs. If not, or if liquids or other suspicious objects (e.g., pellet concentrations) are found in sludge batches, additional measurements will be required as shown. Solids ignitability to be addressed for sludges only in the quantification of nitrates (i.e., oxidizers with or without co-mingled organic oils). Possibility of pyrophoric metals (e.g., U fines or chips) is addressed for debris drums under QW4 and for special cases under QW5).	DELETE – This has been combined with QW4 because we are not differentiating between sludge, soil, debris in the OU 7-10 Glovebox Excavation Method.	

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW4	W4, W6, W8, W10, W11, W12, W13, W16	Assure safe storage of waste zone material (which includes sludges and interstitial soil). Stained soils, non-sludge wastes (i.e., solid debris-items), and soil/waste mixtures (including sludge mixed with soils).	3.2.1.4 3.1.2.1.3 3.2.9.1 3.2.3.1 3.5.3.4 3.7.3.1.3 3.1.2.3.1 3.7.3.1.8 3.7.3.1.9 3.7.4.1.7 3.2.3.2 3.7.11.5 3.2.3.3 3.1.1.3.2 3.1.1.3.1	Collect sufficient information to support safe, compliant storage and segregation of incompatible wastes.	NOTE: Non-sludge wastes shall only be subject to measurements 1, 3, 4 and 7. <u>Screening</u> 1. Visual Description. -Color -Consistency -Orig. Packaging Description 2. VOCs 3. Weight in new Pkg. 4.a. TRU-activ., nCi/g 4.b. Pu equivalent, Ci. 4.c. Fissile equivalent 4.d. U-isotopic-masses 4.e. Pu-isotopic-masses 4.f. Am-241-mass 5. Moisture 6. Volume in new Pkg. 7. pH 8. Nitrates 9. CLP Metals 10. Reactive cyanide 11. Corrosivity (for liquids-only) 12. Ignitability (for liquids-only)	<u>Screening</u> 1. 100% MHC visual inspection. 2. Grab samples will be collected and composited for VOC screening from each waste batch. Samples will be maintained in temporary cold storage (e.g., blue-ice/portable coolers) while awaiting VOC analysis. Samples to be sized to produce surplus material in support of other analysis objectives. 3. Approx. density obtained from weight and volume as repackaged in MHC. 4. 100% drum assay will provide radiological characterization. A statistically based number of confirmatory samples will be collected and analyzed to validate assay data for waste matrices not well represented by calibration standards. 5. Moisture to be obtained for stained soils only from VOC analysis sample (2, above). 6. Visual at closure of new drum in MHC. of container 7. Grab samples will be collected and composited from each transfer cart load of waste zone material 2. Analyze samples* from each non-sludge waste batch for lab characterization of incompatibles, if screening methods are not successful. 10. 100% MHC visual inspection, collect and analyze biased samples where concentrated cyanides are suspected. 11. 100% MHC visual inspection, collect and analyze biased samples where free liquids are found. 12. 100% MHC visual inspection, collect and analyze biased samples where free liquids are found. *Batch composite samples will be collected and archived in support of QW4, treatability study and other data objectives.	<u>Screen where practicable</u> 1. Visual 2. GCMS: SW-846-8260B 3. N/A 4. NDA 5. ASTM E829 6. N/A Confirmatory Analyses 7. SW-846-9045C 8. SW-846-9056 9. SW-846-6010B/7000A 10. SW-846 Ch. 7, Sect. 7.7.3; 9014 11. SW-846-9045C 12. SW-846-1010	Definitive and/or screening	Screening 1. N/A 2. 100 µg/kg 3. ± 10 lb 4. TBD-As achievable w/ current state-of-art. 5. 5 wt-% 6. nearest 1/8 drum Confirmatory Analysis 7. ±0.1 pH-units 8. 1 mg/kg 9. CLP 10. 1 mg/kg 11. ±0.1 pH-units 12. ±1 °C 2., 4. Density estimate to be calculated from noted weight and volume measurements. If screening methods identify waste sufficiently, confirmatory analyses will not be required. If not, or liquids or other 6. If suspicious objects (e.g., pellet concentrations) are found in waste batches, additional measurements will be required as shown. “Sufficiently,” as used in the previous paragraph, means that results from the two analysis methods (i.e., screening and confirmatory) are statistically equivalent for some number of initial comparisons. Non-sludge wastes excluded from noted measurements as Stage II chemical compatibility assessment did not conclude that those waste streams posed risks to safe storage.	<u>REVISE</u> - Archive sampling is no longer required based on current Stage II objectives. Waste determination as required by <u>AMWTF WAC</u> . Basis will be derived from data collected under <u>QW12</u> and <u>process knowledge documentation</u> .	

Table B-2. (continued). (Draft Rev. E)

DQO Ref. #*	Related Process Blocks	Objective	TPR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW5	W4, W5, W5a, W6, W8, W10, W11, W12, W13, W16	Assure safe storage of unique items encountered in RFP wastes (i.e., unknowns such as lab packs, powdered metals, gas cylinders, munitions, etc.).	3.2.1.4 <u>3.1.2.1.3</u> 3.2.9.1-3.2.3-1 3.5.3.4 3.7.3.1.3 3.1.2.3-1 3.7.4.1.7 <u>3.2.3-2</u> 3.7.11.5 <u>3.1.1.3-1</u> <u>3.1.1.3-2</u>	Collect sufficient information to support safe management and segregation of incompatible wastes.	1. Conduct visual examination 2. Conduct screening if possible (TBD based on item found) 3. Collect sample and analyze for unknowns based on what is determined from #1 and #2 above	If necessary, sample will be collected. Sampling methodology is based on what is found. Special case waste procedures may be implemented here.	TBD based on item found	Definitive and/or screening		TBD may include any/all of screening measurements noted in other Stage II DQOs as well as other measurements not specified herein.	

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW6	W6, W14, W15, W16	Provide data for a threshold screening of ≤10 nCi/g wastes, or stained soils, or waste/soil mixtures (characterization of debris is not intended as required toward this objective*).	3.2.1.4 3.7.3.1.3 3.7.8.13 3.7.8.14 3.7.8.15	Characterize waste excavated and retrieved from Pit 9 to support Hazardous Waste/Foxie Substances Control Act (TSCA) determination levels. In particular, data collected here will support residual risk determination for potential Return-to-Pit (RTP). Validate existing process knowledge regarding PCB content.	QW2 & QW4 screening measurements SVOCs CLP Metals PCBs	1. See sampling methods for QW2 & QW4 screening measurements. 2. A number of confirmatory samples will be retrieved and analyzed to validate process knowledge conclusion as to lack of SVOCs at levels of concern. Designation of samples to receive SVOC analysis will occur at collection, to allow proper climate control (e.g., blue-ice/portable coolers) enroute to analysis. 3. A statistically-based number of samples will be retrieved and analyzed to produce a population estimate as to metals content. Designation of samples to receive metals analysis may occur up to six months after collection. 4a. A number of confirmatory samples will be retrieved for non-743 contaminated batches and analyzed to validate process knowledge conclusion as to lack of PCBs. Designation of samples to receive PCB analysis may occur up to three months after collection. 4b. 100% retrieval of archived samples from batches classified as 743 sludge-contaminated for PCB analysis to identify any < 50 ppm drums. Designation of samples to receive PCB analysis may occur up to three months after collection. 4c. Grab samples will be collected and composited for screens of each stained soil batch. Statistically-based laboratory confirmation will be performed on the soil population screened as < 50 ppm PCBs. Designation of samples to receive PCB confirmatory analysis may occur up to three months after collection.	Screening 1. See analytical methods for QW2 & QW4 screening measurements. 4c. SW-846-4020 Definitive Analysis 1. N/A 2. N/A 3. SW-846-6010B/7000A 4b. SW-846-8082 Confirmatory Analyses 2. SW-846-8270C 4a,c. SW-846-8082	Screening 1. See detection limits for QW2 & QW4 screening measurements. 4c. 20 ppm Definitive Analysis 1. N/A 2. N/A 3. CLP 4b. 1 ppm Confirmatory Analyses 2. CLP 4a,c. 1 ppm	All retrieved wastes will be managed as listed wastes based on RFP process knowledge. *As residual risks presented by contaminated debris are unlikely to be significant, the expense and complexity of characterizing contaminated debris is unwarranted. However, loose sludges or soils retrieved within a mixed debris batch shall be sampled and analyzed for use in threshold screens.	DELETE – For the Glovebox Excavation Method, interstitial soil is included with the waste zone material. The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 4.3.4, Risk Estimate. Threshold screen objective is no longer part of Stage II objectives/requirements.	

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW7	W6, W12, W16	Provide data for a waste determination of >10 nCi/g wastes; stained soils; or waste/soil mixtures waste zone material.	3.2.1.4.3.1.2.1.3.3.7.3.1.3.1.2.3.1	Assign characteristic waste codes; when possible, using data obtained from previous objectives (i.e., QW2 & QW4) and process knowledge. Characterize wastes excavated and retrieved from Pit 9 to support TSCA determination levels.	1. QW2 & QW4 screening measurements 2. PCBs	1. See sampling methods for QW2 & QW4 screening measurements. 2a. A number of confirmatory samples will be retrieved for non-743 contaminated batches and analyzed to validate process knowledge conclusion as to lack of PCBs. Designation of samples to receive PCB analysis may occur up to three months after collection 2b. 100% retrieval of archived samples from batches classified as 743 sludge contaminated for PCB analysis to identify any < 50 ppm 743 drums. Designation of samples to receive PCB analysis may occur up to three months after collection 2c. Grab samples will be collected and composited for screens from stained soil a statistically determined number of containers. Statistically-based laboratory confirmation will be performed on the soil population screened as < 50 ppm PCBs. Designation of samples to receive PCB confirmatory analysis may occur up to three months after collection	Screening 1. See analytical methods for QW2 & QW4 screening measurements 2e. SW 846-4020 Definitive Analyses 2.b SW 846-8082 Confirmatory Analysis 2ae. SW 846-8082	Definitive and screening	Screening 1. See detection limits for QW2 & QW4 screening measurements. 2e. 20 ppm Definitive Analyses 2b. 1 ppm Confirmatory Analysis 2a.e 1 ppm	NOTE: Containerized debris and soil/waste mixtures that are >10 nCi/g will be managed as listed waste based on RFP historie classifications. NOTE: Full hazardous waste determination (i.e., assignment of characteristic codes) will not be performed to support Stage II storage.	
QW8	W10, W13	Determine TRU activity of all Waste and Stained Soils waste zone materials.	3.7.3.1.5.3.7.3.1.6.3.7.4.1.3.3.7.11.7.3.1.2.3.5.3.1.3.3.3	Segregate waste drums by TRU concentration: i.e., ≤10, >10 but <100 (orphan), ≥100 nCi/g.	TRU activity	100 % assay at container level.	NDA	Definitive and/or screening	As achievable w/ current state of art.		DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW9	W6; W10; W13; W16	Determine TRU measurement confidence for all Waste and Stained Soils.	3.7.3.1.7 3.7.8.19 3.7.8.27 3.7.8.28 3.7.8.29 3.7.8.30 3.7.8.31 3.7.8.50	Provide data to establish the effectiveness and confidence of detecting TRU constituents greater than 10 nCi/g in Pit 9 materials.	1. TRU activity 2. Am-241 3. Np-237 4. Pu Isotopes 5. U Isotopes 6. Gamma isotopes	1. 100% assay at drum level. 2-6. Biased grab sample at drum level to validate TRU content via assay for waste matrices not well represented by calibration standards. A statistical subset of these samples will be submitted for laboratory analysis. Designation of samples to receive confirmatory analysis may occur up to three months after collection.	1. NDA 2. Alpha spec. 3. Alpha spec. 4. Alpha spec. 5. Alpha spec. 6. Gamma spec.	Definitive and/or screening	1. As achievable w/ current state of art 2. 10 pCi/g 3. 10 pCi/g 4. 10 pCi/g 5. 10 pCi/g 6. 1 pCi/g	The primary means of confirming the confidence with which the assay system can detect TRU constituents greater than 10 nCi/g will be based upon the analysis of prepared standard drum samples.	DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.
QW10	W4, W6; W16; W17; W18; W19; W20; W21	Provide data in support of possible consideration for WIPP disposal for wastes (including all waste/sludge/soil mixtures) with TRU activity > 100 nCi/g.	3.7.3.1.8 3.7.3.1.9	Characterize waste excavated and retrieved from Pit 9. In particular, data collected here will fill data gaps against WIPP waste acceptance criteria Stage II TRU wastes. Information obtained here will supplement existing process knowledge to determine whether waste contains relevant WIPP “prohibitors” but is not intended to establish full WIPP WAC acceptance.	1. Visual Description of contents 2. PCBs 3. Ignitable (only required if free liquid wastes are present) 4. Corrosives (only required if free liquid wastes are present) 5. Reactives 6. No free liquid wastes (must be < 2 liters total residual liquid per 55-gallon drum) or < 1 inch in the bottom of any container.	1. 100% MHC visual inspection. 2a. A number of confirmatory samples will be retrieved for non-743 batches and analyzed to validate process knowledge conclusion as to lack of PCBs. 2b. 100% retrieval of archived samples from batches classified as 743 sludge contaminated for PCB analysis to identify any < 50 ppm 743 drums. 3, 4. Take a sample only if free liquids are present. 5. 100% visual inspection; collect biased samples for analysis where reactives/cyanides are suspected present. 6. Inspect and document stabilization of any free liquids as repackaged in new drum.	1. N/A 2. SW-846-8082 3. SW-846-1010 4. SW-846-9045C 5. SW-846-Ch-7.7.3, 9014 6. Visual inspection; SW-846-9095A	Definitive and screening.	1. N/A 2. 1 ppm 3. ±1 °C 4. ±0.1 pH units 5. 1 mg/kg 6. TBD	DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements. Stage II material is being characterized for safe storage and acceptance by AMWTF.	
QW11	W4, W6; W16; W17; W18; W19; W20; W21	Support trade studies to assess the treatment/ disposal options and identify the best option for each treatment group.	3.7.3.1.8 3.7.3.1.9 3.7.3.1.10	Characterize material excavated and retrieved from Pit 9 to support trade studies.	1. QW1-QW10 2. TBD*	1. See QW1-QW10 2. TBD*	1. See QW1-QW10 2. TBD*	1. See QW1-QW10 2. TBD*	1. See QW1-QW10 2. TBD*	*NOTE: Additional analyses may be directed after initial retrieval operations in support of disposition trade studies; QW2 and QW4 will collect surplus samples in support of this possibility.	DELETE -The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 3.3, Stage II Objectives and Requirements, does not include treatability studies. Materials present in storage would potentially be available for other uses post- Stage II.

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QW12	N/A	Characterize waste zone material for acceptance at Advanced Mixed Waste Treatment Facility	3.1.2.4-3 3.1.2.3-3 3.1.2.3-5	Provide data on excavated waste zone material for disposition to AMWTF	1. Weight of container 2. CLP Metals 3. Nitrates 4. pH 5. VOCs 6. SVOCs 7a. PCBs in liquid 7b. PCBs in waste zone material 8.a TRU activity, #Ci/g 8.b Pu equivalent, Ci. 8.c Fissile equivalent 8.d U isotopic masses 8.e Pu isotopic masses 8.f Am 241 mass 8.g Total fissile mass (U-233, U-235, Pu-239). 8.h Non-fissile beta-gamma emitting radionuclides 9. Beta/gamma/neutron contact dose rate on container surface 10. Gamma /neutron dose rate at one meter. 11. Neutron contribution (at contact) 12. Container surface smearable alpha/beta contamination 13. Thermal power	1. TBD 2 – 6 and 13.Statistical number of grab samples will be collected and composited from the transfer cartloads for 80% confidence. 7a. 100% visual inspection in glovebox, collect and analyze biased samples where of free liquids are when found. 7b. Grab samples will be collected and composited from a statistically determined number of containers. Statistically-based laboratory confirmation will be performed on the population screened as < 50 ppm PCBs. Designation of samples to receive PCB confirmatory analysis may occur up to three months after collection 8. 100% container assay. 9-12. 100% container survey.	1. Gamma spec. or NDA 2. SW-846 – 6010B/7000 A 3. SW-846 – 9056 4. SW-846-9045C 5. SW-846-8260B 6. SW-846-8270C 7.a Visual, SW-846-8082 for liquids 7b. SW-846-4020 Confirmatory Analysis By SW 846-8082 8. As achievable with current state of art 9-12. Health Physics survey 13. ASTM D240	Definitive, Health Physics Screening	1. TBD 2. CLP 3. 1 ppm 4. ± 0.1 5. CLP 6. CLP 7. 7a. 1 ppm 7b. 20 ppm Confirmatory Analysis 1 ppm 8. TBD As achievable with current state-of-art 9. 1 mRem/hr 10. 1 mRem/hr 11. 1 mRem/hr 12. 10 dpm/100cm ³ beta-gamma, or dpm/100 cm ³ alpha 13. TBD	QW4 characterization assumes the glovebox excavator method project will certify waste to the INEEL portion of the AMWTF WAC. Specific criteria for the glovebox excavator method project are subject to change pending negotiation with BNFL. New objective due to modified Stage II scope. Based on modified Stage II objectives, waste zone material is characterized for disposition to AMWTF	NEW REQUIREMENT -- Ref: WAG 7 Analysis of OU 7-10 Stage II Modifications. October 1, 2001. Section 3.3, Stage II Objectives and Requirements. Section 4.0- “WIPP-Ready Packaging”, p4-4, the recommended disposition of all waste zone packages is to transfer them to AMWTF for WIPP preparation.
QP1	N/A	Monitor and record facility emissions and worker exposure.	3.2.4.1 3.3.5-1 3.2.4.2 3.2.4-1 3.2.4-3 3.2.7.1 3.2.7-1 3.2.8.1 3.3.3.2.10 3.3.1-1 3.5.1 3.2.2-1 3.5.2.1 3.2.7-2 3.5.2.2 3.2.2-2 3.7.2.1 3.7.2.2 3.3.5.2 3.7.2.3 3.7.8.8 3.2.2-3 3.7.8.9 3.7.8.10 3.7.8.47 3.2.7-3 3.7.8.48 3.7.8.49	Start-up/operation authorization and assessing short term risk information, and potential contributor to Stage-III design.	1. Facility air emissions per Stage II Environmental Monitoring Plan, NESHAPS Air Emissions Plan. 2. Secondary Confinement Air-monitoring measurements per Stage II Health And Safety Plan (HASP). 3. Worker radiological monitoring records per Stage II HASP.			1-3. In accordance with referenced plans.	1-3. Does not impose or imply additional measurement requirements beyond what is required by safety and environmental regulations.	REVISE – There will be no air monitoring for VOC’s inside the weather enclosure (there is no secondary confinement). An analysis will be performed to verify that VOC monitoring inside the weather enclosure is not required to meet 29 CFR 1910. The WAG 7 Analysis of OU 7-10 Stage II Modifications. October 1, 2001. Section 1.3, Path Forward, provides no interaction between Stage II and Stage III.	
QP2	All	Document any problems encountered relative to operation within SAR safety-basis safety-significant structures, systems, and components.	3.7.8.11 3.5.5-2	Support Stage II Remedial Action (RA) report and Stage-III planning.	Unreviewed Safety Question (USQ) or stop work records and resolution documentation.						REVISE - The WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, Section 1.3, Path Forward, provides no interaction between Stage II and Stage III.

Table B-2. (continued). (Draft Rev. E)

DOO Ref. #*	Related Process Blocks	Objective	TFR Reference	Data Usage	Measurement	Sampling Method	Analytical Method	Analytical Level	Required Detection Level	Comments/Rationale	Rationale for Modification
QP3	All	Collect Stage II operations costs to support Stage III planning.	3.7.8.12 3.7.8.29 3.7.8.30 3.7.8.31 3.7.8.43 3.7.8.46 3.1.2.5.5 3.7.8.49 3.7.8.51	Support post-Stage II reporting, analysis, and planning efforts.	Actual costs incurred.	WBS				Data Acquisition and Management System (DAMS) DRD lead to Review-Stage II Operations phase Work-Breakdown-Structure (WBS) to ensure capture of desired information.	REVISE - Developing detailed information on anticipated costs for Stage III is not included in the scope of activities for Stage II. The WAG 7 Analysis of QU 7-10 Stage II Modifications, October 1, 2001, Section 1.3, Path Forward, provides no interaction between Stage II and Stage III.
QP4	D1, D3, S2	Determine feasibility of intact drum retrieval without damage.	3.7.1.7 3.7.8.6	Support Stage II R&A report and post-Stage II retrieval designs.	Retrieval operator notes; video records (e.g., presence and quantity of intact drums encountered; effectiveness of Stage II retrieval equipment at maintaining container integrity).						DELETE - WAG 7 Analysis of OU 7-10 Stage II Modifications, October 1, 2001, does not require removing drums intact.